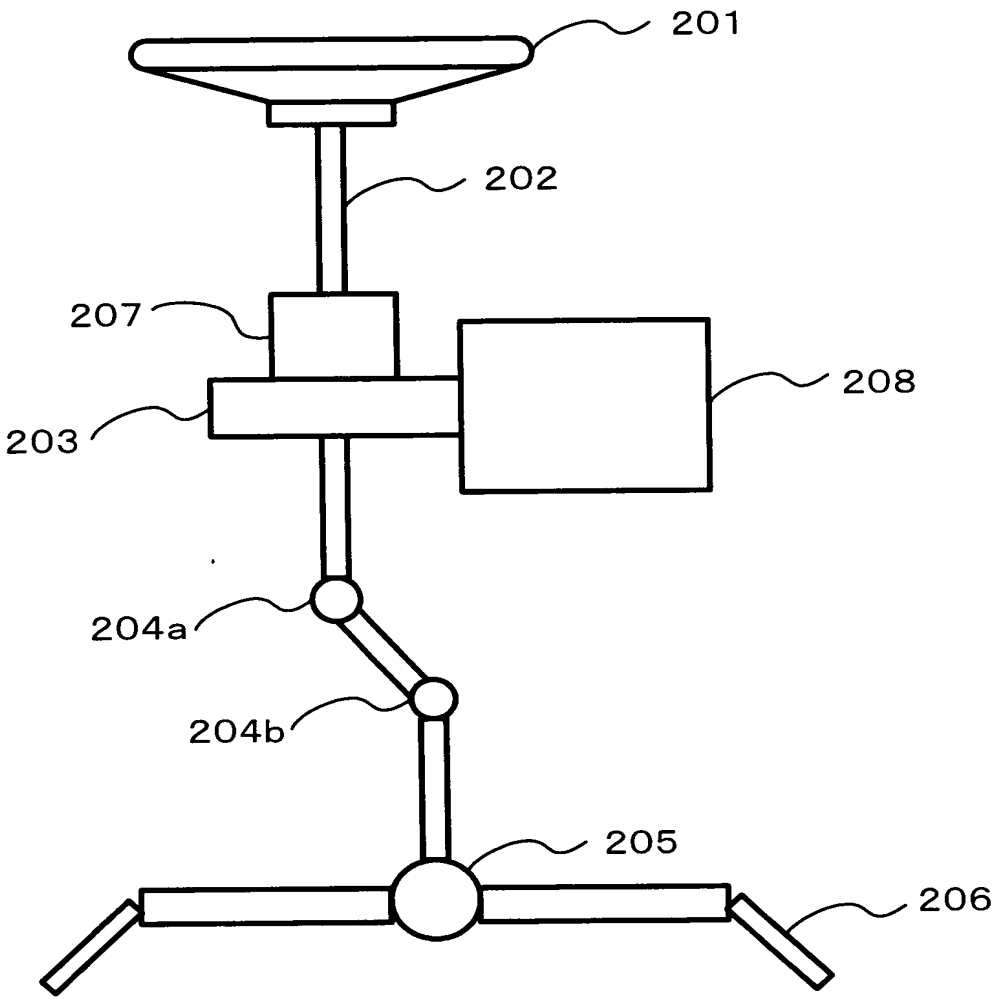
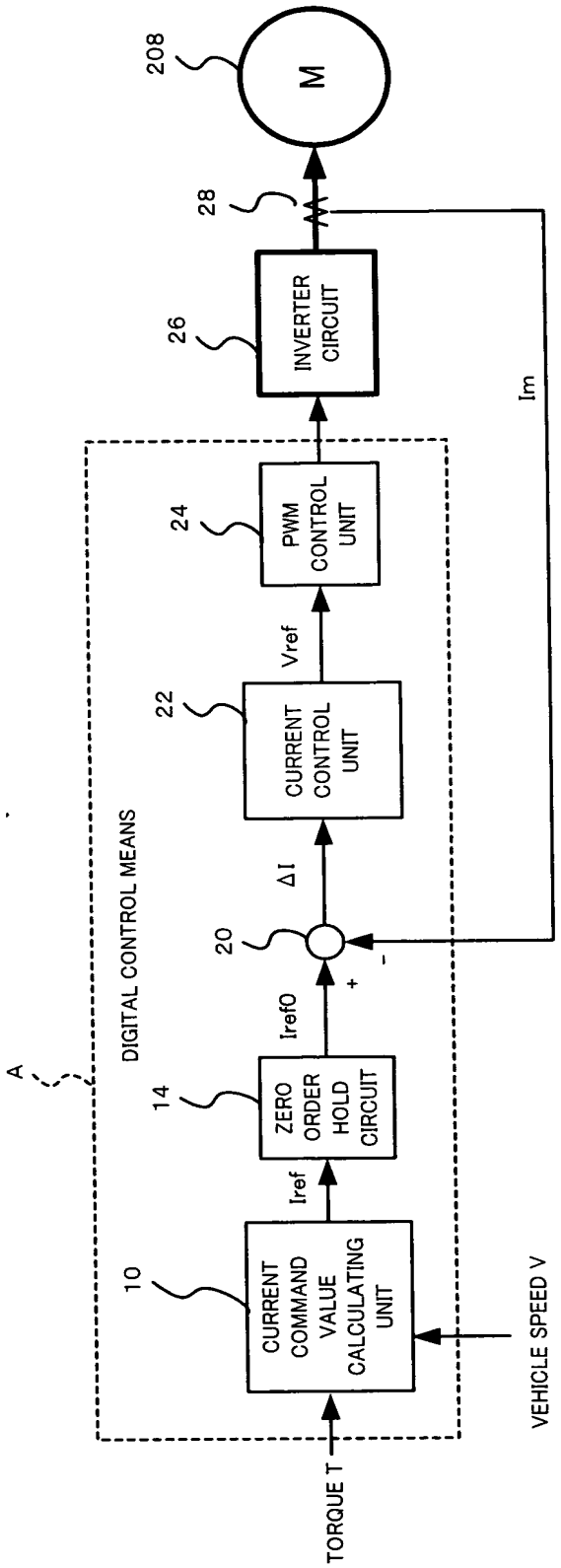
FIG.1



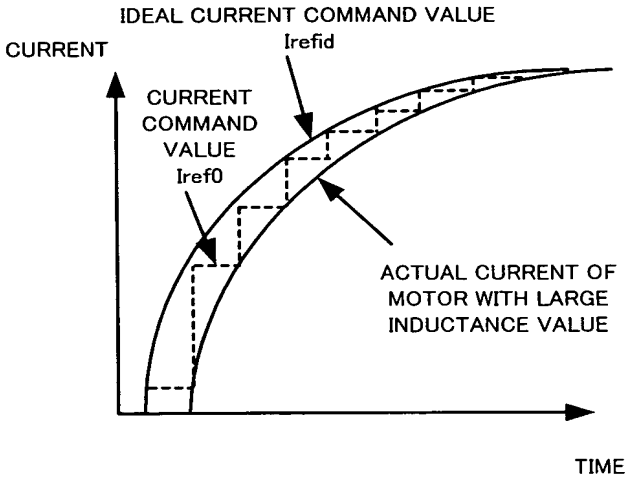
PRIOR ART

FIG.2



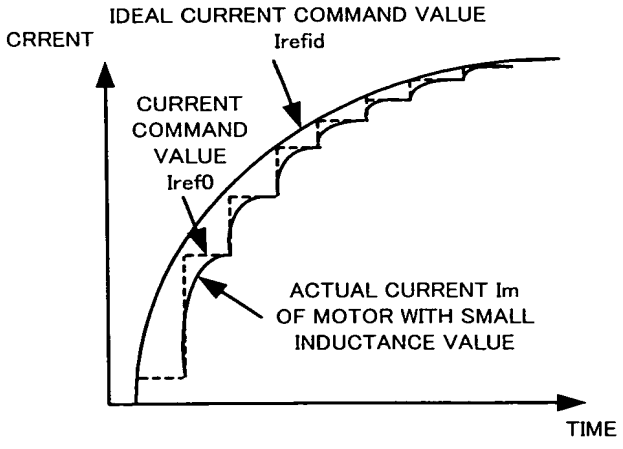
PRIOR ART

FIG.3



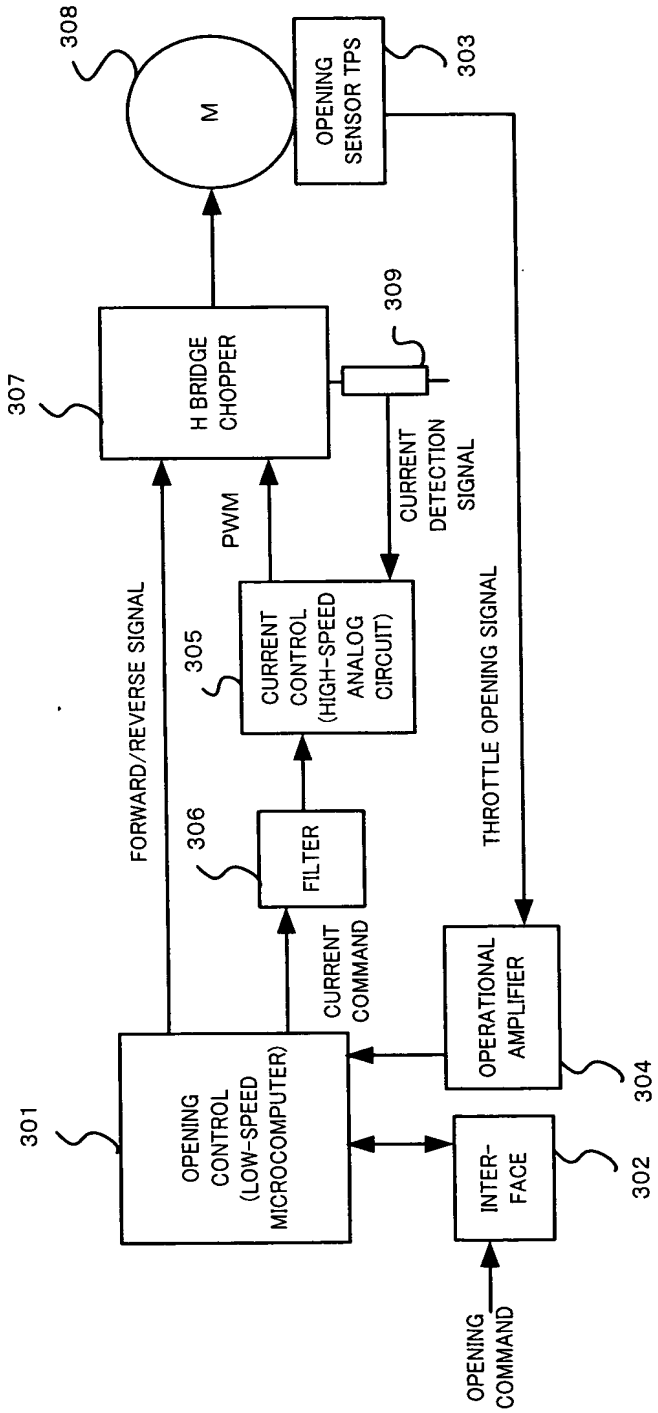
PRIOR ART

FIG.4



PRIOR ART

FIG.5



PRIOR ART

202-293-7060

FIG.6

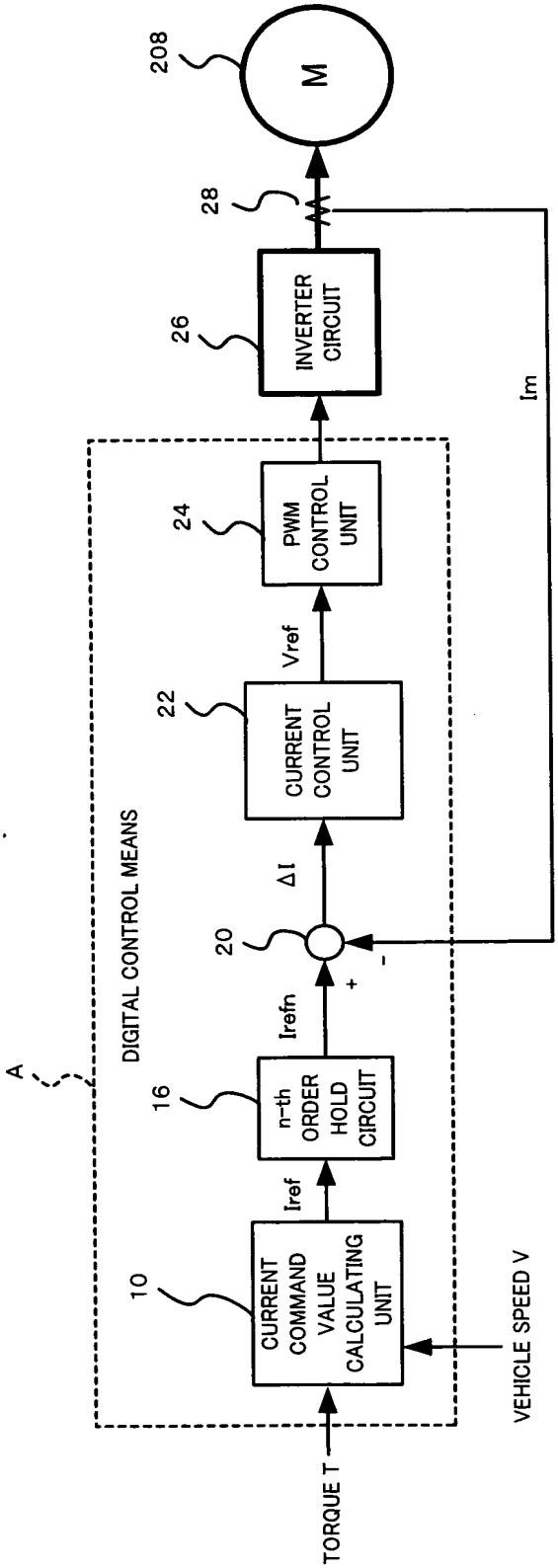


FIG.7

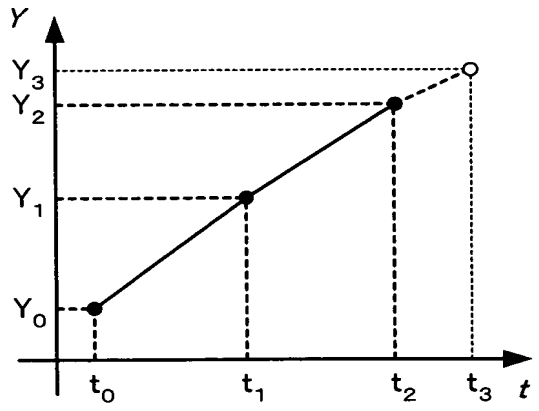
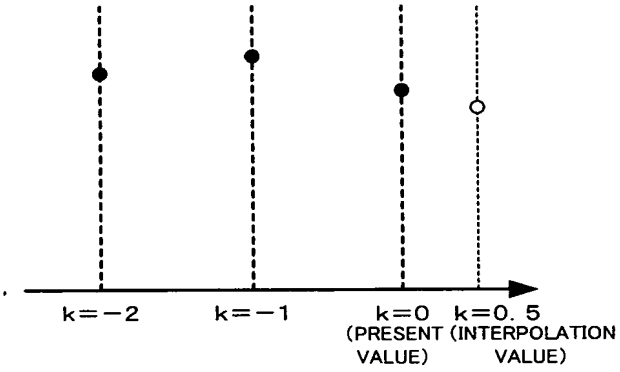


FIG.8



INTERPOLATION VALUE (indicated by ○) IS OBTAINED BY USING THREE POINTS (indicated by ●)

FIG.9

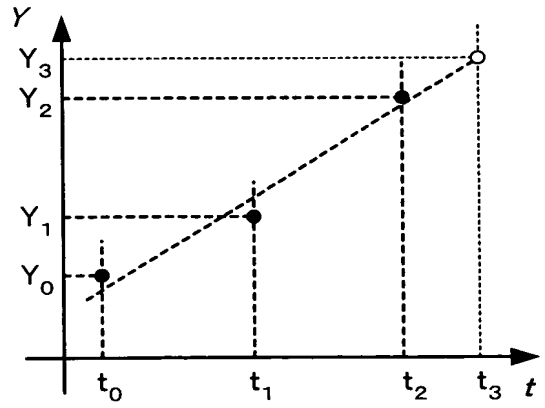


FIG.10

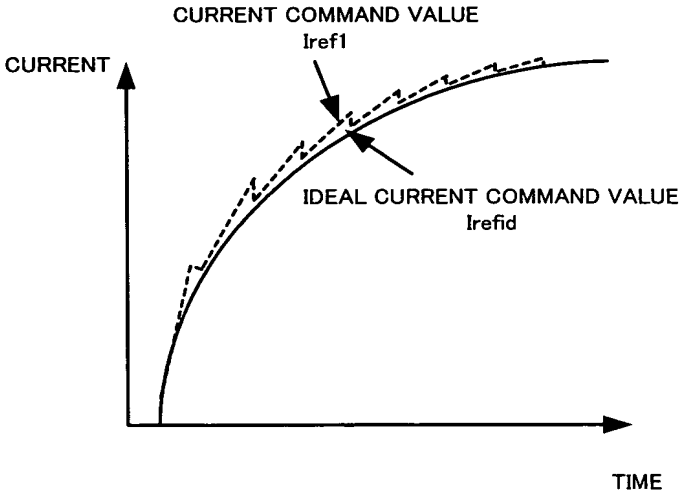

CURRENT COMMAND VALUE
Iref1
CURRENT
IDEAL CURRENT COMMAND VALUE
Irefid
TIME

FIG.11

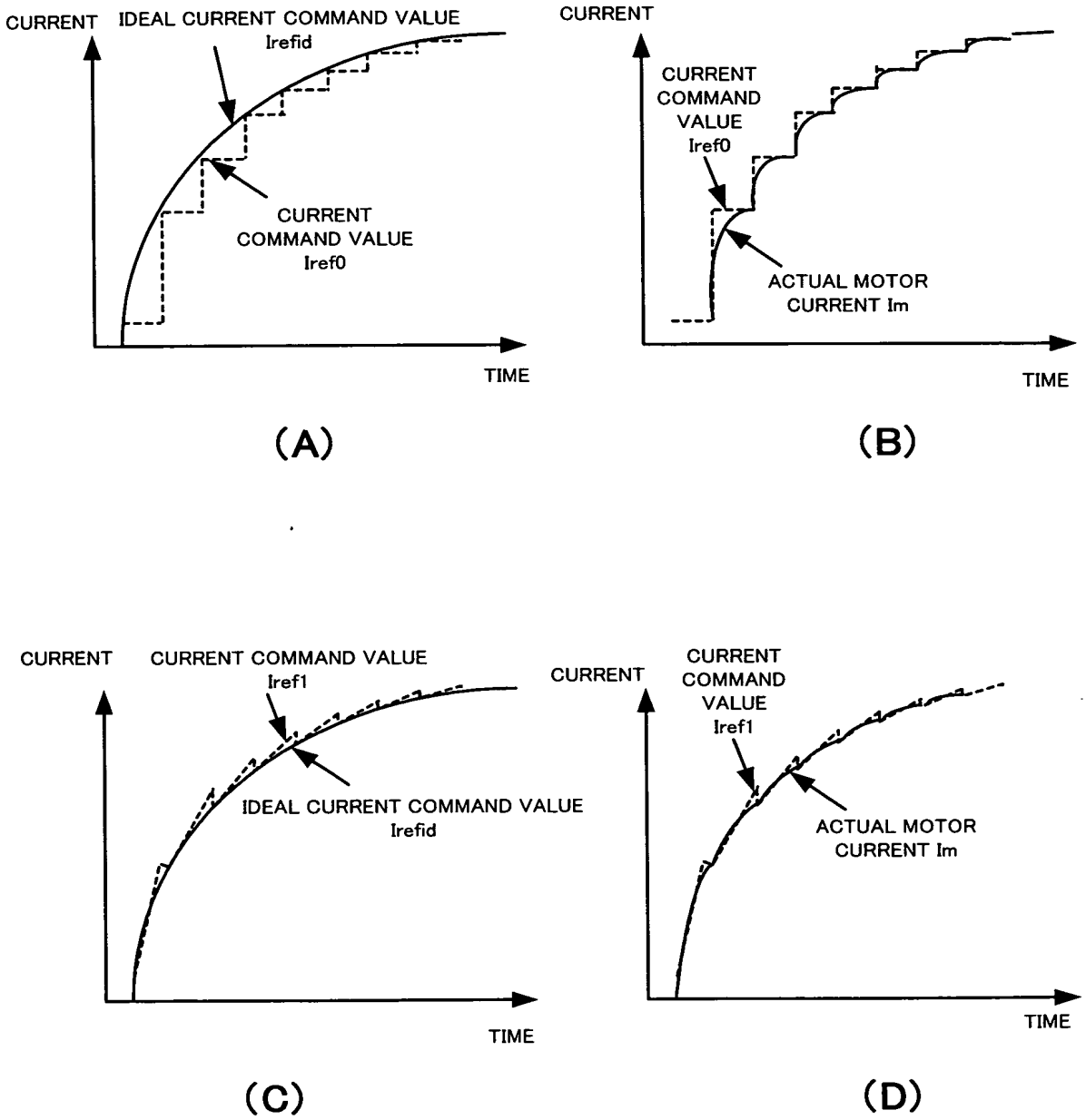

CURRENT
IDEAL CURRENT COMMAND VALUE
Irefid
CURRENT
COMMAND VALUE
Iref0
TIME
(A)
CURRENT
CURRENT
COMMAND
VALUE
Iref0
ACTUAL MOTOR
CURRENT Im
TIME
(B)
CURRENT
CURRENT COMMAND VALUE
Iref1
IDEAL CURRENT COMMAND VALUE
Irefid
TIME
(C)
CURRENT
CURRENT
COMMAND
VALUE
Iref1
ACTUAL MOTOR
CURRENT Im
TIME
(D)

FIG.12

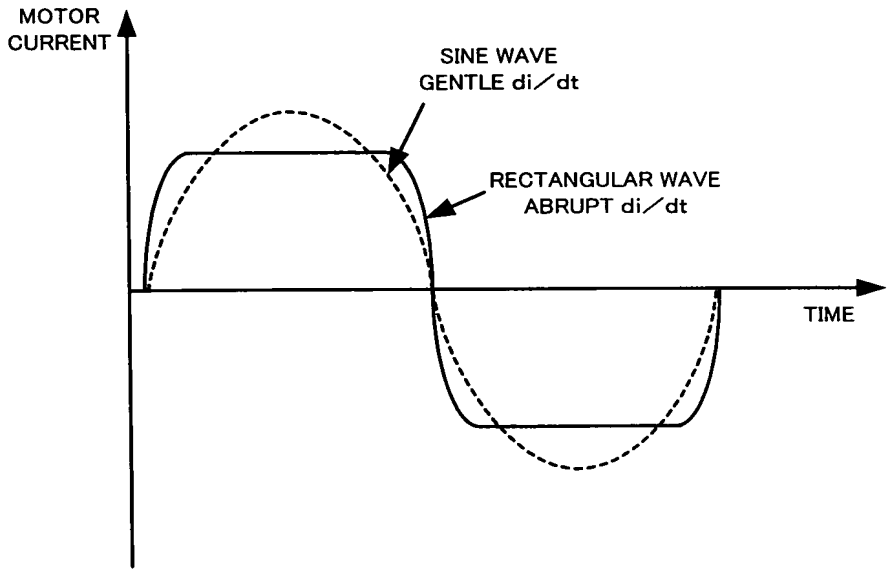

MOTOR CURRENT
SINE WAVE
GENTLE di/dt
RECTANGULAR WAVE
ABRUPT di/dt
TIME

FIG.13

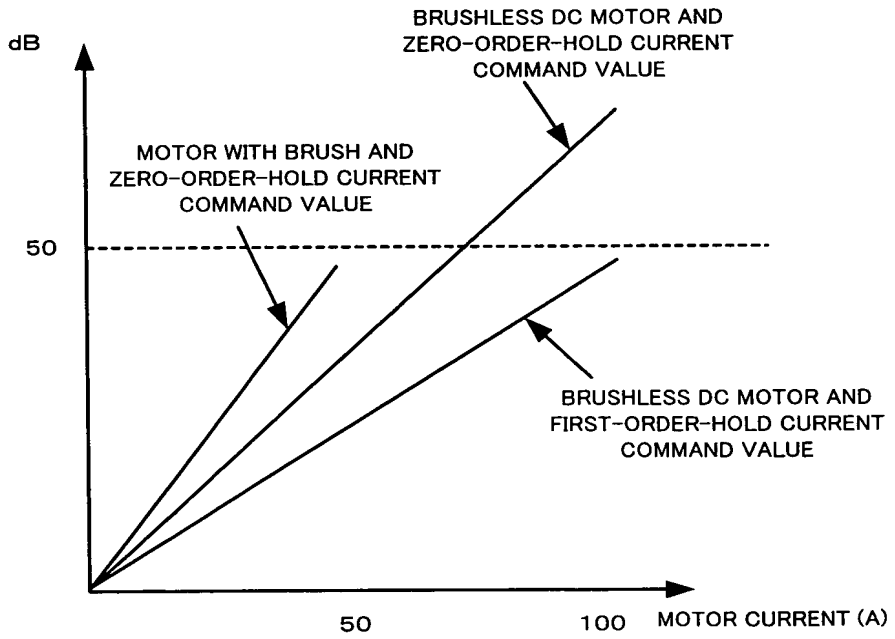
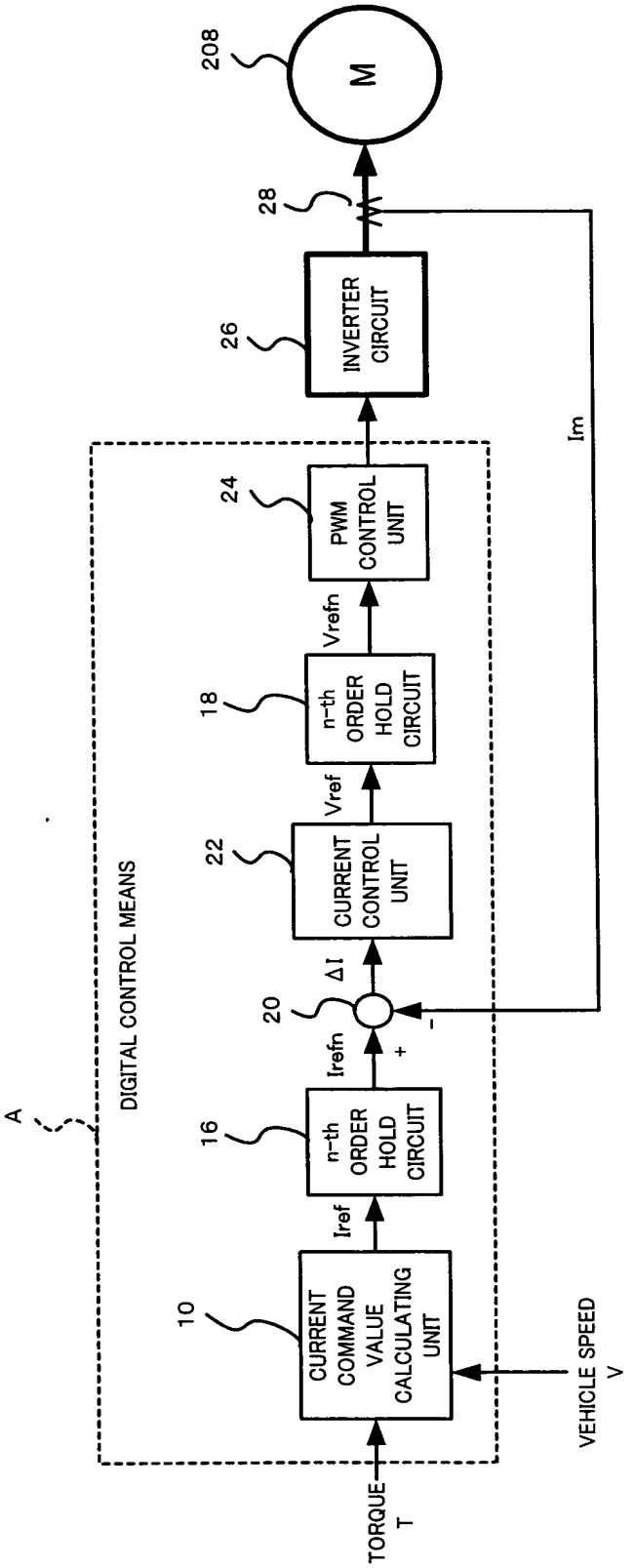

dB
BRUSHLESS DC MOTOR AND
ZERO-ORDER-HOLD CURRENT
COMMAND VALUE
MOTOR WITH BRUSH AND
ZERO-ORDER-HOLD CURRENT
COMMAND VALUE
50
BRUSHLESS DC MOTOR AND
FIRST-ORDER-HOLD CURRENT
COMMAND VALUE
50
100
MOTOR CURRENT (A)

FIG.14


208
M
28
26
INVERTER CIRCUIT
Im
24
PWM CONTROL UNIT
Vrefn
18
n-th ORDER HOLD CIRCUIT
Vref
22
CURRENT CONTROL UNIT
ΔI
20
+
-
Irefn
16
n-th ORDER HOLD CIRCUIT
Iref
10
CURRENT COMMAND VALUE CALCULATING UNIT
A
DIGITAL CONTROL MEANS
TORQUE T
VEHICLE SPEED V